CUBITAL TUNNEL SYNDROME

I. BACKGROUND

Cubital tunnel syndrome consists of compression of the ulnar nerve at the medial side of the elbow either proximal to, within, or distal to Osborne's ligament. The ulnar nerve runs along the medial (inner) aspect of the elbow and courses behind the medial epicondyle (the prominent bone on the inside of the elbow) travelling distally to innervate the musculature of the hand. The condition may have multiple causes, including:

A. Chronic compression,
B. Local edema or inflammation,
C. Space-occupying lesions such as tumors,
D. Overuse of the elbow in a repetitive flexion and extension fashion,
E. Habitual sleeping in the "fetal position" with prolonged flexion of the elbow in this position.
F. In association with weight loss or other metabolic disorder.

The condition can occur at any age but is generally seen between 25 and 45 years of age. It occurs slightly more frequently in women than in men.

II. DIAGNOSTIC CRITERIA

A. Pertinent Historical and Physical Findings.

Patients most frequently complain of paresthesias, numbness and tingling in the ulnar nerve distribution of the hand (the ulnar half of the right finger and the small finger). This is frequently noted in the morning after sleeping all night with the nerve bent (this is most frequently seen in patients who sleep with their arm bent either tucked under the pillow or next to their head).

Symptoms are also frequently noted after extensive elbow flexion/extension use and to a lesser degree persistent postural maintenance of the arm in an unusual location. The most characteristic history involves

numbness and tingling in the ring and small finger with occasional burning or pain at the elbow region itself. Patients can have radiation of symptoms to the neck region with pain at that location. Weakness of grip (due to intrinsic muscle loss) is occasionally seen and demonstrates advanced disease.

One must be careful to evaluate other causes of ulnar nerve distribution numbness and tingling such as compression of the ulnar nerve at the wrist (Guyon's canal compression syndrome) and thoracic outlet syndrome (involving compression of the brachial plexus in the shoulder/neck region which most frequently involves the lower roots causing numbness and tingling in the ring and small finger). An elbow flexion test is also frequently seen as positive. Testing of the intrinsic musculature of the hand specifically with resisted abduction of the fingers is important to determine if any intrinsic atrophy has occurred indicating advanced disease. These tests should be considered strongly corroborative, but their absence in and of themselves does not exclude the diagnosis.

B. Appropriate Diagnostic Tests and Examination.

1. Radiographs of the elbow.
2. Electromyographic and nerve conduction studies.
3. Rule out metabolic factors that could give rise to peripheral neuropathy such as diabetes and pernicious anemia and other metabolic disorders, including chronic alcoholism.

C. Supporting Evidence.

Positive electromyographic and nerve conduction studies can be helpful in establishing the diagnosis, although a relatively substantial number of patients can have negative electrodiagnostic studies and still have this condition. Electrodiagnostic tests with an appropriate clinical history and physical examination are most useful in patients who have atypical distribution of symptoms or where secondary gain may be a motive. The most difficult

differentiation generally involves patients who have neck pain or symptoms related to the neck/shoulder region.

III. TREATMENT

A. Outpatient Treatment.

1. Nonoperative treatment - treatment is generally limited to four to eight weeks, provided all appropriate conservative measures have been assessed.

a. Indications.
All patients who do not demonstrate muscle atrophy.

b. Treatment Options.
1) Elbow extension splint worn at night.
2) Nonsteroidal anti-inflammatory medications.
3) Activity modifications to avoid repetitive elbow flexion.

c. Rehabilitation.
1) Extension splinting at night per treatment options protocol.

d. Supporting evidence consists of a transient response to extension splinting of the elbow at night.

2. Ambulatory Surgery.
Referral to an Orthopedic Surgeon, Neurosurgeon, or Hand Surgeon is indicated before proceeding with the surgical treatment.

a. Indications.
1) Failure to respond to conservative nonoperative treatment.
2) Presence of intrinsic muscle atrophy or weakness.
3) Progressive or non-changing symptoms.

b. Treatment Options.

1) Release of the ulnar nerve at the cubital tunnel with anterior transposition of the nerve itself.

2) Release of the ulnar nerve at the cubital tunnel with medial epicondylectomy.

c. Rehabilitation.

1) Range of motion and strengthening exercises to the hand, wrist, and elbow.

2) Night time splinting in the immediate postoperative period.

3) Heat prior to range of motion exercises.

B. Estimated Duration of Care.

1. Nonoperative treatment - maximum medical improvement.

2. Operative treatment - eight to ten weeks following surgery.

PROTOCOL HISTORY
Passed: 6/18/96
Effective: 7/08/96